Washington University in St. Louis

Environmental Health & Safety

July 16, 2003

OSWER Docket
EPA Docket Center
Mailcode: 5305T
1200 Pennsylvania Ave., NW.
Washington, DC 20460-0002

Re: Docket ID No. RCRA-2003-0012

Washington University in St. Louis (WU) submits the following comments in response to your request published June 3, 2003 in the *Federal Register*. As a university with two Large Quantity Generator (LQG) campuses and over 1,000 laboratories, WU has a great deal of experience with hazardous waste management in an academic setting. We commend the Environmental Protection Agency (EPA) for acknowledging the need for regulatory reform and we are providing comments that we believe will enhance compliance, provide better protection to the environment and facilitate waste minimization.

We strongly encourage the EPA to adopt the recommendations developed in the Howard Hughes Medical Institute (HHMI) collaborative project on consensus best management practices for hazardous waste in academic research institutions. Ten of the nation's top academic research institutions, along with their 10 state environmental enforcement agencies and the EPA Office of Solid Waste and Emergency Response (OSWER) cooperatively developed best management practices for management of hazardous waste in academic research institutions. Please see http://www.epa.gov/epaoswer/osw/specials/labwaste/r02008.pdf for a list of the HHMI collaborative project recommendations.

In addition to the HHMI recommendations, we add the following specific comments based on the questions listed in the *Federal Register*.

1. *When should the hazardous waste determination be made in a laboratory setting?*

   Waste determinations are best made when the material enters the campus' central hazardous materials collection and management area (the central area for less than 90-day, or less than 180-day, hazardous waste storage). Current RCRA regulations are often interpreted to require a waste determination to be made at the point of generation in the laboratory or art studio. This often results in faculty, staff and graduate students having to assess the RCRA waste codes for waste mixtures and reagents that are no longer needed. In order to simplify classification systems for this changing target audience, often all unwanted chemicals are

deemed waste. Once deemed waste, it impedes redistribution of reagents and usable chemicals to other laboratories, studios and shops; it increases disposal costs, and reduces opportunities for waste minimization.

We suggest allowing unwanted chemicals, including hazardous wastes from labs and studios, to be collected and removed from instructional and research areas and relocated to a secure storage facility. The hazardous waste determination can then be made at the secure storage area. Delaying the determination until the waste is removed from a laboratory or art studio, allows environmental health and safety (EH&S) staff, or designated individuals, to make informed decisions about the RCRA classification of the unwanted materials. Other uses for the material, such as waste reduction alternatives, can be developed thereby providing an opportunity for small-scale treatment at the central collection and management area.

2. *What training is needed for lab personnel concerning hazardous waste determinations (e.g. full RCRA training or training that is made specific to the chemical management duties)?*

   Considering the diversity of chemical wastes found in academia and the frequently changing population in those settings, it is recommended that EPA limit the training requirements of laboratory and art studio personnel to a performance-based model appropriate for their chemical management duties. Full RCRA training, including waste code determination and manifest preparation is inappropriate for laboratory and art studio personnel. Laboratory and art studio personnel should be able to answer five performance-based questions for federal and state regulatory personnel: (1) what is hazardous in their laboratory or studio, (2) how do they protect themselves, other people, and the environment from those hazards, (3) what do they do in the event of a fire, explosion, spill, chemical exposure, or release (notify proper university officials), (4) how do they dispose of all hazardous materials (make sure the materials get to the institution's environmental health and safety staff or designated personnel), and (5) what steps do they take to minimize the amount of waste chemicals they generate.

3. *How should waste be labeled so it can be appropriately managed as hazardous waste (e.g., the words "hazardous waste" or a detailed chemical description)?*

   It is advisable to designate containers of unwanted chemicals with some sort of common identifier, such as "Chemicals for management by EH&S" and a chemical identifier appropriate for the chemical. In many basic academic laboratories, the "chemical identifier" may simply be the chemical name. More advanced academic research laboratories may require more detailed chemical descriptions. In the spirit of performance-based regulation, each campus should be allowed to determine what chemical identifier(s) would be most appropriate for their specific waste streams.

   It is important that this requirement be applied in a sensible manner. One of the waste reduction methods implemented in academic laboratories involves microscale chemical activities. This can result in extremely small quantities of waste. When wastes are contained in extremely small vials or other very small containers, it is appropriate for the labels to be

placed on a larger, secondary container used to collect many small vials rather than requiring labeling of each individual vial.

4. *Where should the hazardous waste determination be made (e.g., on the bench or in the 90 to 180 day storage area)?*

   As noted in response to Question #1, the hazardous waste determination for laboratories and art studios in an academic setting are best completed when the waste enters the campus' central hazardous materials collection and management area.

   It must be noted that this process is not necessarily best suited for a RCRA 90- or 180-day storage area as suggested in this question. The academic calendar is based upon semesters that are typically 100 to 115 days in length. The 90-day limits of the RCRA regulation require LQG schools to manage waste in a manner that is out of synch with chemical waste generation, which results in inefficient waste management, increased costs, and lost waste minimization opportunities. It would be extremely beneficial to synchronize hazardous waste management with the academic calendar.

5. *How should the Satellite Accumulation Area (SAA) Accumulation time (volume exceeding 55 gallons of hazardous waste or 1 quart of acute hazardous waste must be removed within 3 days) be applied in a laboratory context?*

   Academic laboratories and art studios can be congested with projects and equipment. These areas often have large numbers of students and are not appropriate locations for the storage of hazardous waste. A more liberal interpretation of "at or near the point of generation," such as in an adjacent laboratory room which may not be necessarily in direct line of sight, but in some sort of secondary containment, would:

   1. facilitate the prompt removal of waste from student-occupied spaces
   2. reduce the risk of exposure and spills/releases, and
   3. result in much more efficient use of limited space.

   We strongly recommend the EPA allow colleges and universities up to two weeks to move unwanted chemical containers from laboratories and art studios to the campus' central hazardous materials collection and management area. A two-week cycle, rather than three days, allows college and university environmental health and safety (EH&S) staff to systematically schedule collections on campus. It allows time for EH&S staff to: review the hazard classes of the chemicals needing collection, prepare shipping papers (if necessary), segregate and overpack containers if necessary, and transport chemical containers to the central collection and management area. Given the large numbers of rooms in multiple buildings, and the hundreds of containers that need to be collected, segregated and overpacked each week for safe movement to the central collection and management area, two weeks is a much more reasonable time to move unwanted chemical containers from laboratories and art studios. We feel that the recommended changes would help minimize unintended accidents and releases.

6. *How often do laboratories accumulate more than 55 gallons of waste in their SAA?*

   The 3-day limit in the academic sector is more likely to be triggered by the generation of more than 1 quart of acute hazardous waste than by 55 gallons of other-than-acute-hazardous waste. A trigger volume of hazardous waste is most often generated at the end of the academic year, or due to faculty retirements and lab closures. In these cases, a two week limit rather than 3-days, in conjunction with allowing institutions to make waste determinations back in the campus central collection and management areas would alleviate the difficulties institutions face in meeting the 55-gallon and 3-day limits.

7. *What, if any, difficulties do environmental health and safety personnel have responding to waste pick-up calls, e.g., within the three-day time limit?*

   WU has approximately three staff dedicated at each campus for collection and management of hazardous waste and unwanted chemicals. The three-day time limit imposes a great difficulty on the institution. As developed in the HHMI collaborative project, a two-week time period is much more reasonable for collection of unwanted chemicals from laboratories and art studios. We strongly recommend the EPA allow colleges and universities up to two weeks to move unwanted chemical containers from laboratories and art studios to the campus' central hazardous materials collection and management area. A two-week cycle, rather than three days, allows college and university environmental health and safety (EH&S) staff to systematically schedule collections on campus. It allows time for EH&S staff to review the hazard classes of the chemicals needing collection and allows for the preparation of shipping papers, if necessary, and overpacking of containers, to transport the chemical containers to the central collection and management area. Given the numerous rooms in multiple buildings, and the hundreds of containers that need to be collected, segregated and safely moved to the central collection and management area, two weeks is a much more reasonable time to move unwanted chemical containers from laboratories and art studios. It prevents rushing, which could lead to unintended accidents and releases.

   A three-day limit causes disruption of service to other campus entities because staff must drop what they are doing to pick up the subject material. This causes much inefficiency such as visiting the same building twice in one week. End of semester activities, when the majority of labs are cleaning out satellite accumulation areas, also make the three-day limit a challenge.

8. *How would a longer time frame for removal impact the cost of waste management and the ability to protect human health and the environment?*

   Synchronizing the waste management calendar with the Academic Calendar would provide academic institutions the most financial relief from regulation. Many small schools pay more for shipping than they do for waste disposal. Longer accumulation times would allow schools to consolidate waste for more economical waste disposal.

Allowing two-weeks, rather than 3-days, to move chemicals from laboratories and art studios to central collection and management areas would reduce the number of staff needed for collection.

9. *What types of treatment, other than neutralization, are laboratory personnel currently performing or would like to perform?*

Currently, WU only allows only pre-approved simple neutralizations and silver recovery from photofixer waste streams in the laboratories. This was an administrative decision based on liability (penalties for noncompliance) that far exceeds any economic benefit provided by in-house treatment. WU decided to close its permitted treatment facility for the same reason. Academic laboratories generate an innumerable variety of wastes. Researchers, Principal Investigators, and their support staffs are in the unique position of being intimately familiar with chemical processes that could reduce the volume, toxicity and reactivity of their typically small volume of wastes. Unfortunately, the current regulatory environment provides little incentive to treat these wastes.

Rather than focusing on "what can be treated?," more attention should be given to "how much waste can be safely treated?". Most bench top uses of chemicals produce less than 50 grams of chemical waste per experiment. Quantities this small of toxic or reactive substances can be safely managed in the laboratory; however, regulations with far less complexity would be necessary before WU would allow faculty and staff to treat hazardous waste. Standard references on the treatment and deactivation of chemicals are good guides for small scale treatment that could be performed in laboratories and studios without the need for a treatment permit. The references include, but are not limited to: *Hazardous Laboratory Chemical Disposal Guide, Second Edition* (Armour, 1996), *Prudent Practices in the Laboratory: Handling and Disposal of Chemicals* (National Research Council, 1995), and *Destruction of Hazardous Chemicals in the Laboratory, Second Edition* (Lunn & Sansone, 1994).

A treatment question that comes up time and again in academic institutions is the evaporation of water from dilute metal salt containing aqueous streams. Researchers wish to evaporate the water to concentrate the metal salts for disposal and do not feel there is a scientific basis for the need to keep the container closed, as the hazardous constituents, the metals, stay in the container after the water is evaporated. It is sometimes difficult to explain to laboratory personnel that even though there is no harm to the environment, and no personal safety concerns, these waste containers must be kept closed because of regulatory requirements. If possible, EPA should consider reviewing the closed container and treatment requirements for a limited range of waste streams that meet this criterion – aqueous based with non-volatile hazardous constituent(s), which can be concentrated to minimize waste volume generation and waste disposal costs.

10. *What would be the benefits of the desired types of treatment?*

Bench top scale treatment of the small amounts of hazardous waste generated in laboratories and art studios would facilitate treatment by the individuals most qualified to render the waste

non-hazardous. The benefits include reduced disposal costs, reductions in waste volume, toxicity and reactivity and a learning opportunity for researchers working with hazardous chemicals. It would not be difficult to imagine an environment where researchers identify best management practices simultaneous to the synthesis of new chemical compounds.

11. Other issues that affect hazardous waste management?

There are two additional issues that WU believe are related to the questions asked by the EPA: remote facilities and the definition of laboratories.

Many large institutions, such as WU, operate many small remote research units. Under current regulations, they would be considered Conditionally Exempt Small Quantity Generators (CESQG), but they are often closely tied to activities on the main campus. Rather than managing the waste independently with excessively high costs, it would be advantageous if the waste could be moved to the main campus and managed with the bulk of the institutions hazardous waste. In addition to cost savings, such a measure would enhance protection of the environment because the waste would be managed as part of a LQG rather than a CESQG.

The definition of a laboratory is another aspect that creates a compliance challenge for institutions of higher learning. There is much more to laboratories that bench tops and glassware. A laboratory can look like a metal shop, an art studio, a wildlife preserve, or a pilot plant. If the EPA pursues regulatory changes for academic laboratories, it is important to note that the regulated community is likely looking at a larger universe of facilities.

Thank you for the opportunity to provide comments on this issue. If you have questions about any of these comments, please contact me at 314-362-6816.

Sincerely,

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